

Claims

1. An encapsulated, overmolded and/or underfilled electrical component, comprising:

an electrical component encapsulated, overmolded and/or underfilled with a polymeric composite including a synthetic resin matrix and inorganic filler particles substantially uniformly distributed in the matrix, the particles having a platelet structure defined by opposite substantially flat and substantially parallel faces, the distance between the faces defining a thickness of the particles, a weight average ratio of surface area of one of the faces of each particle to the thickness of each particle being at least 100.

2. The compound of claim 1, wherein the electrical component is a substrate having an electrical circuit formed on at least one surface of the substrate and at least one semi-conductor chip electrically connected to the electrical circuit.

3. The component of claim 1, wherein the weight average ratio of surface area of one of the faces of each particle to the thickness of each particle is at least 200.

4. The component of claim 1, wherein the inorganic filler content is 20 percent or less by weight based on the weight of the polymeric composite.

5. The component of claim 1, wherein the inorganic filler content is 15 percent or less by weight based on the weight of the polymeric composite.

6. The component of claim 1, wherein the filler is a smectite clay mineral.

7. The component of claim 6, wherein the smectite clay mineral is montmorillonite.

8. The component of claim 1, wherein the matrix is a thermoset resin.

9. The component of claim 8, wherein the thermoset resin is selected from epoxy, phenolic, polyurethane and polyurea resins.

10. The component of claim 1, wherein the matrix is a thermoplastic resin.

11. The component of claim 10, wherein the thermoplastic resin is selected from polyamides, copolyamides, polycarbonates, polyesters and copolyesters.

12. The component of claim 1, wherein the composite has a CTE from about 5 to 20 ppm/°C.

13. An encapsulated, overmolded and/or underfilled electrical component, comprising:

an electrical component encapsulated, overmolded and/or underfilled with a polymeric composite including a thermoplastic resin matrix and an inorganic particulate filler.

14. The component of claim 13, wherein the electrical component is a substrate having an electrical circuit formed on at least one

surface of the substrate and at least one semi-conductor chip electrically connected to the electrical circuit.

15. The component of claim 13, wherein the weight average ratio of surface area of one of the faces of each particle to the thickness of each particle is at least 200.

16. The component of claim 13, wherein the inorganic filler content is 20 percent or less by weight based on the weight of the polymeric composite.

17. The component of claim 13, wherein the inorganic filler content is 15 percent or less by weight based on the weight of the polymeric composite.

18. The component of claim 13, wherein the filler is a smectite clay mineral.

19. The component of claim 18, wherein the smectite clay mineral is montmorillonite.

20. The component of claim 13, wherein the resin is selected from the group consisting of polyamides, copolyamides, polyesters, copolyesters and polycarbonates.

21. The component of claim 13, wherein the inorganic particulate filler is glass spheres.

22. The component of claim 21, wherein the glass spheres have an average diameter of from about 1 micrometer to about 50 micrometers.